



TITLE:

Identification of "Trigon" Particles of Gold Sol with Electron Diffraction

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CITATION:

Suito, Eiji ...[et al]. Identification of "Trigon" Particles of Gold Sol with Electron Diffraction.
京都大学化学研究所報告 1951, 26: 79-79

ISSUE DATE:

1951-12-10

URL:

<http://hdl.handle.net/2433/74320>

RIGHT:

18. Identification of "Trigon" Particles of Gold Sol with Electron Diffraction

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For the purpose of identifying the triangle and hexagonal particle crystallized and grown up in gold sol which was obtained by the reduction of auric chloride solution with hydrogen peroxide, we adopted electron diffraction method using the same specimen that had been used for electron microscopy, as the electron microscope (SM-T4) could also be used as diffraction apparatus. We obtained the three kinds of diffraction patterns, one was a pattern of Debye-Scherrer rings and the other two were net-like patterns. Because of the fact that the particles were very large from the electron micrographical point of view in comparison with the wave length of the used electron beam ($\lambda=0.061\text{\AA}$), the obtained pattern showed very coarse rings which indicated very good accordance with the standard rings obtainable under the same condition with a specimen of thin evaporated gold film. This showed that these particles were all gold crystals and not other material. When the beam was projected to a single triangle particle, two kinds of net-like patterns were obtained. One of them showed that the direction of the incident electron beam was parallel to the (111) plane of the gold crystal, and the other perpendicular to the same plane. On detecting the orientation of the particles to the beam direction, it became clear that from the arrangement of the indexed spots on the *N*-patterns, the triangle of hexagonal plane of the crystals corresponded to the (111) plane of the face centered crystal lattice of gold.

19. Colloid Chemical Studies on the Formation of Ultrafine Powder III. Carbonation of Aqueous Suspension Containing Magnesium Oxides or Hydrates

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In the previous report, (this Bull., 18 (1940) 117) we investigated on the formation of ultrafine CaCO_3 by the carbonation of CaO . Now, the chemical kinetics of